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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,561	02/12/2002	Abdurrahman Sezginer	SEN-019	6547

7590 12/22/2003

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EXAMINER

SMITH, ZANDRA V

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/074,561	<b>Applicant(s)</b> SEZGINER ET AL.	
	<b>Examiner</b> Zandra V. Smith	<b>Art Unit</b> 2877	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-15, 24-31 and 38-40 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 11, 16, 20, 32, 33, 35 and 36 is/are rejected.
- 7) ☒ Claim(s) 3-10, 17-19, 21-23, 34 and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>9/02</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 11, 16, 20, 32-33, and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bareket (6,079,256)* in view of *Credendino et al. (6,436,595)*.

As to **claims 1-2 and 11, 16**, Bareket discloses a system for overlay alignment measurement of wafers, comprising:

forming test areas as part of the patterned layers, wherein a first diffraction grating (20) is built into a first patterned layer and a second diffraction grating (30) is built into a second patterned layer having zero or more layers of other materials separating layers the layers the two gratings substantially overlapping when viewed from a direction that is perpendicular to the surfaces of the two layers (col. 3, lines 30-35); and observing the overlaid diffraction gratings using an optical instrument capable of measuring reflectance as a function of polarization of the illumination and detection (col. 5, lines 30-65). Bareket differs from the claimed invention an optical model is not used in the determination of the overlay accuracy, however to do so is well known as taught by Credendino. Credendino discloses a method of aligning lithographically printed product layers that includes the use of an optical model (col. 12, lines 37-55). It would have been obvious to one having ordinary skill in

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the art at the time of invention since the images produced by various optical instruments are identical the use of an optical model with details chosen to match an object to be measured allows for determination of overlay error with little error.

As to **claim 20**, Bareket and Credendino discloses everything claimed, as applied above, in addition properties of light as a function of wavelength are measured (col. 11, lines 20-30).

As to **claims 32 and 35**, Bareket and Credendino discloses everything claimed, as applied above, in addition a second test area is observed, the second test area having a pattern built into its layers (col. 7, lines 25-55).

As to **claims 33 and 36**, Bareket and Credendino discloses everything claimed, as applied above, in addition the pattern is a box-in-box pattern (see fig. 1).

### ***Allowable Subject Matter***

Claims 12-15, 24-31, and 38-40 are allowable over the prior art of record.

Claims 3-10, 17-19, 21-23, 34, and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious an opaque layer between the gratings, the optical model representing the electromagnetic field in the gratings, calculating, the optical response, gratings with different pitches, monitoring the zeroth

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order light diffracted from the layers, using an ellispometer to measure overlay, in combination with the rest of the limitations of claim.

***Conclusion***

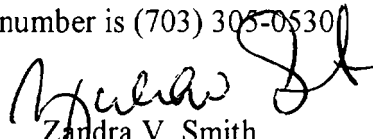
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Baggenstoss (6,440,612).***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877

12/12/03